

39-21 (51835)  
MTC 6721.1  
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of Eric Haupfear, et al. Group Art Unit 1623  
Serial No. 09/863,885  
Filed May 22, 2001  
Confirmation No. 9345  
For REACTION SYSTEMS FOR MAKING N-(PHOSPHONOMETHYL) GLYCINE  
COMPOUNDS  
Examiner Paul A. Zucker

June 28, 2002

INFORMATION DISCLOSURE STATEMENT

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TO THE COMMISSIONER OF PATENTS AND TRADEMARKS,

SIR:

In accordance with 37 C.F.R. §1.97 and 1.98 and MPEP 609, and in compliance with the duty of disclosure set forth in 37 C.F.R. §1.56, Applicants submit copies of the references listed on the attached Form PTO/SB/08A for consideration by the Patent and Trademark Office in the above-entitled application and to be made of record herein.

One of the enclosed references is a copy of the International Search Report (Form PCT/ISA/210) prepared by the European Patent Office as the International Searching Authority in connection with International Application No. PCT/US 01/10826. International Application No. PCT/US 01/10826 is the PCT analog of the subject U.S. application.

Applicants have not obtained a translation of EP 0 595 124 A1. However, this reference corresponds to U.S. Patent No. 5,410,085, a copy of which is submitted herewith.

Applicants have not obtained a translation of EP 0 680 948 A1. However, this reference corresponds to U.S. Patent No. 5,650,537, a copy of which is submitted herewith.

This Information Disclosure Statement also provides information regarding oppositions filed by Applicants' assignee, Monsanto, against European Patent No. 0 019 445 and corresponding Australian Application No. 58285/80 assigned to Nitrokemia Ipartelepek, two of the references enclosed herewith and listed on the Form PTO/SB/08A. These references describe and claim a process for conducting a batch oxidation of N-(phosphonomethyl)iminodiacetic acid (N-PMIDA) substrate in the presence of a noble metal on carbon catalyst to produce N-(phosphonomethyl)glycine (hereinafter "glyphosate"), wherein the charge mixture initially contains particulate N-(phosphonomethyl)iminodiacetic acid suspended in an apparently saturated aqueous solution thereof. The total initial concentration of N-(phosphonomethyl)iminodiacetic acid in the suspension is at least about 7 g per 100 ml of water. The disclosure in Nitrokemia is limited to a batch oxidation process and fails to teach or suggest conducting the oxidation of N-(phosphonomethyl)iminodiacetic acid in a continuous mode.

Moreover, these references contend that higher specific conversions of N-(phosphonomethyl)iminodiacetic acid to glyphosate are achieved in a batch reaction by starting with a suspension rather than an unsaturated, or even saturated, solution of N-(phosphonomethyl)iminodiacetic acid in the aqueous medium. Although these references contain no discussion of kinetics as such, the Nitrokemia contention regarding specific conversion would appear consistent with an expectation that the reaction rate depends on the integrated average N-

(phosphonomethyl)iminodiacetic acid substrate concentration in the aqueous phase (i.e., that the reaction would behave in accordance with first order, or at least other than a zero order, kinetics). In this respect, the Nitrokemia references lead away from conducting the oxidation of N-(phosphonomethyl)iminodiacetic acid in a continuous mode in an oxidation reaction zone substantially back-mixed in the liquid phase as recited, for example, in claims 65, 92, 104, 110 and 289 of the subject application, since one skilled in the art would expect generally unsatisfactory productivity from conducting a first order reaction in a continuous reactor system operating under substantially back-mixed terminal conditions in which the steady state concentration of N-(phosphonomethyl)iminodiacetic acid is very low. The Nitrokemia references confuse the issue by stating that the reaction in a suspension system may take place only at the boundary surfaces, without making it clear what "boundary surfaces" are contemplated. But whatever the implications of the latter teaching, the Nitrokemia references certainly would not lead one skilled in the art to the processes claimed in the instant application.

Monsanto, the assignee of the instant application, opposed the Nitrokemia patent applications in Europe and in Australia, arguing that the reaction rate is dependent only on catalyst concentration, and that no benefit in conversion is actually achieved by starting with a suspension of N-(phosphonomethyl)iminodiacetic acid in a saturated solution thereof. In support of its opposition in Australia, Monsanto lodged an affidavit in the Australian Patent Office on August 14, 1985. This affidavit was executed by Thomas J. Richard on July 16, 1985 (hereinafter the Richard affidavit).

Applicants have ordered and obtained a copy of the contents of the application files for European Patent No. 0 019 445 and Australian Application No. 58285/80 from the European and Australian Patent Offices. The Richard affidavit, a copy of which is submitted herewith and listed on the Form PTO/SB/08A, was included in the materials obtained by Applicants from the Australian Patent Office. The public may obtain a copy of the contents of the application files for European Patent No. 0 019 445 and Australian Application No. 58285/80 from the European and Australian Patent Offices upon request and payment of the applicable fees.

The Richard affidavit contains data showing that the conversion rate in the oxidation of N-(phosphonomethyl)iminodiacetic acid substrate to glyphosate is a linear function of catalyst concentration using a carbon catalyst at concentrations of 0.8 to 1.2% by weight and a starting N-(phosphonomethyl)iminodiacetic acid concentration of 7.3 g per 92.0 ml water. Based on this data, the Richard affidavit concludes that "changes in 'specific conversion' value may be obtained simply by increasing the catalyst charge at a given temperature and pressure, regardless of the concentration of starting material. Anyone skilled in the art would recognize that the reaction rate for such a process is also dependent on pressure, temperature and the activity of the catalyst used." Richard affidavit at paragraph 23 (emphasis in original). Later in the Richard affidavit, it is stated with respect to the oxidation of N-(phosphonomethyl)iminodiacetic acid that "[i]n fact the reaction rate depends upon the concentration of catalyst in the aqueous system at any given oxygen pressure, and operating temperature, and is absolutely independent of the amount of N-

PMIDA starting material in the system at all relevant concentrations." Richard affidavit at paragraph 25.

It is not stated on the record of the application files for European Patent No. 0 019 445 or Australian Application No. 58285/80 that the oxidation of N-(phosphonomethyl)iminodiacetic acid substrate to glyphosate is zero order. There is no mention of the order of the reaction. However, the above-quoted statement in paragraph 25 of the Richard affidavit might be understood by those skilled in the art as indicating that the oxidation reaction is in fact zero order at some concentrations of the N-(phosphonomethyl)iminodiacetic acid substrate.

In response to the Richard affidavit, Nitrokemia Ipartelepek submitted the declaration of Dr. Peter Hajdu (hereinafter the Hajdu declaration) to the Australian Patent Office. The Hajdu declaration, a copy of which is submitted herewith and listed on the Form PTO/SB/08A, was included in the contents of the application file for Australian Application No. 58285/80 obtained by Applicants from the Australian Patent Office. The Hajdu declaration at least partially refutes the above-quoted statement in paragraph 25 of the Richard affidavit. Hajdu declaration at paragraph 20.

For purposes of this submission, it is assumed that the contents of the application file for Australian Application No. 58285/80, including the Richard affidavit and Hajdu declaration, were available for inspection and copying by the public more than one year prior to the effective filing date of the subject patent application. For purposes of initial examination only, Applicants stipulate that the Richard affidavit and Hajdu declaration be treated as prior art under 35 U.S.C. §102.

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However, Applicants expressly reserve the right to contest the prior art status of these documents.

This Information Disclosure Statement is being submitted pursuant to 37 C.F.R. §1.97(b) in that Applicants believe that it is being filed prior to the mailing date of the first Office action on the merits. Accordingly, neither a statement nor fee under 37 C.F.R. §1.97(c) or (d) is required.

Respectfully submitted,



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\*Attachments/Enclosures

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